Congenital Granular Cell Lesion: Clinical, Microscopic and Immunohistochemical Aspects in a Case of Multiple Lesions

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Congenital granular cell lesion of the newborn, also known as congenital epulis, is a rare benign oral cavity tumor presenting at birth. Usually, it appears as a solitary mass arising in the mouth and originates from the anterior alveolar ridge. The objective of the present article is to report a case of congenital granular cell lesion in an 8-day-old female newborn. The patient presented four intraoral pedunculated lesions. Diagnosis, treatment, microscopic and immunohistochemical characteristics are also discussed.

Keywords: *Congenital epulis; Granular cells lesion; Newborn diseases; Minimally invasive surgical procedures.*

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INTRODUCTION

Congenital granular cell lesion (CGCL), also known as congenital epulis, is rare. It occurs on the gingiva of the anterior alveolar ridge of the jaws. These lesions behave in a benign manner and no recurrent or metastatic lesions have been reported.[1,2,3] Since Neumann described the first case in 1871,[4] more than 250 cases have been reported in the literature.

The tumor presents in the alveolar mucosa as a smooth-surfaced sessile or pedunculated solitary mass[5] with a normal to reddish color. Its size varies from several millimeters to a few centimeters in diameter, and it may interfere with respiration or feeding.[3,6] Multiple lesions are uncommon.

Etiologic factors for CGCL are uncertain. The female preponderance and the cessation of growth or even spontaneous regression of the lesion after birth, when maternal hormones are absent, suggest maternal hormonal influence.[1,7,8]

Surgical excision is generally indicated and no recurrences have been reported. Spontaneous regression of the lesions is rare.[3] The histogenesis of CGCL remains inconclusive, but the main hypothesis is the fibroblastic origin.[9] Some examples of immunohistochemical staining are found in the literature.[5,7,9–15]

Case report

An 8-day-old Caucasian girl, born at 40 weeks' gestation weighing 4 kg, was brought by her parents for evaluation of several masses protruding from her mouth, which were causing feeding difficulties, but no airway obstruction (Figure 1). The infant was born by normal cesarean delivery, with uneventful prenatal and perinatal course, and was otherwise healthy. Intraoral examination revealed four pedunculated solid swellings; two located at the mandible and two at the maxilla (Figure 1). The lesions were pinkish and had different sizes.

The lesions were completely excised under general anesthesia, with minimal intraoperative hemorrhage (Figure 1). Regular oral feeding was initiated immediately after surgery and was well tolerated. Histologically, the lesions were composed of juxtaposed nonencapsulated large polygonal cells, with pale granular cytoplasm and central nuclei, among a vascular proliferation (Figure 2). S-100, CD1A (Langerhans cells marker), CD68 (macrophage marker), cytokeratins AE1/AE2, HHF35 (muscle-actin-specific monoclonal antibody), coagulation factor XIIIa (dendritic cells marker), estrogen receptor (1D5), progesterone receptor (1A6), desmin, melanoma markers (melan A and HMB45) and smooth muscle actin immunohistochemical stains were negative, while immunostaining for vimentin was positive

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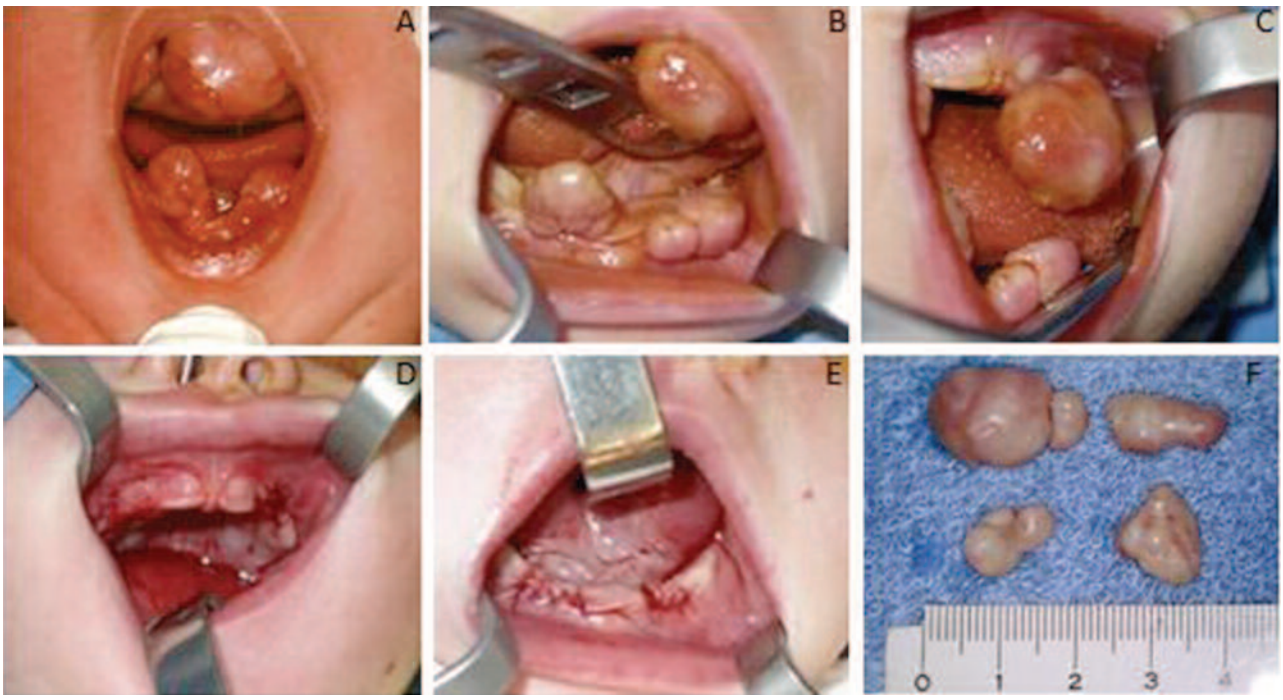

Figure 1. Details of the four lesions. **A:** Inspection of the lesions during crying. **B, C:** Pedunculated aspects and yellowish color after iodine asepsis of the mouth immediately before surgical excision. **D, E:** Immediate aspect after surgery. **F:** Macroscopic view of the specimens.

(Table 1, Figure 3). These findings were consistent with congenital granular cell lesion of the newborn. At a 4-year follow-up there were no signs of local recurrence of the tumor (Figure 4).

DISCUSSION

CGCL is a relatively rare lesion also referred as "congenital epulis" or "congenital granular cell tumor" in the literature. It most frequently occurs as a single tumor, but rarely (10%) as multiple ones.[8,16-18] Additional congenital or underlying bone or dental anomalies are usually not present, although there are reports of a hypoplastic or absent underlying tooth.[16]

Imaging in cases of CGCL may be important, especially for antenatal diagnosis using ultrasonography.[3,18,19] In our case, antenatal ultrasound did not reveal any abnormality,

Table 1. Summary of the immunomarkers panel used.

Antibodies	Immunostaining
S-100	-
CD1A	-
CD68	-
AE1/AE3	-
Vimentin	+
HHF35	-
Factor XIIIa	-
Estrogen receptor (1D5)	-
Progesterone receptor (1A6)	-
Desmin	-
Melan A	-
HMB45	-
Smooth muscle actin	-

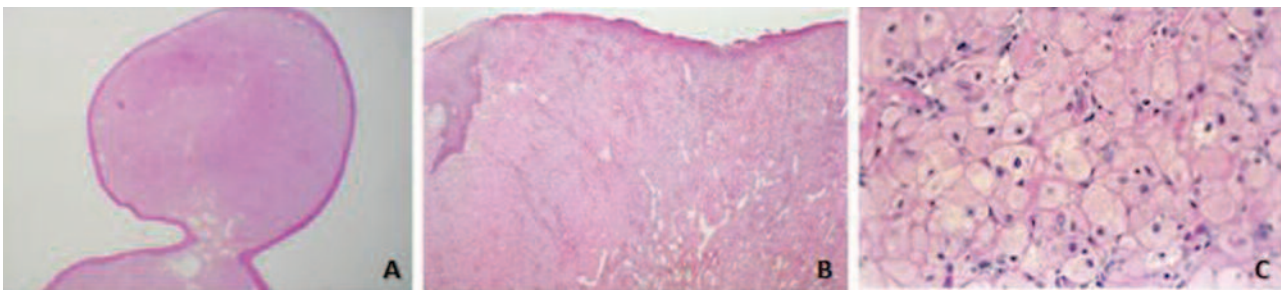

Figure 2. Microscopy features of the lesions (H.E.): A: Polypoid aspect of one lesion which showed intense vascularization (10X); B: Lesion covered by collagenous connective tissue with an overlying keratinizing squamous epithelium (40X); C: Large polygonal cells juxtaposed to each other, with pale granular cytoplasm (100X).

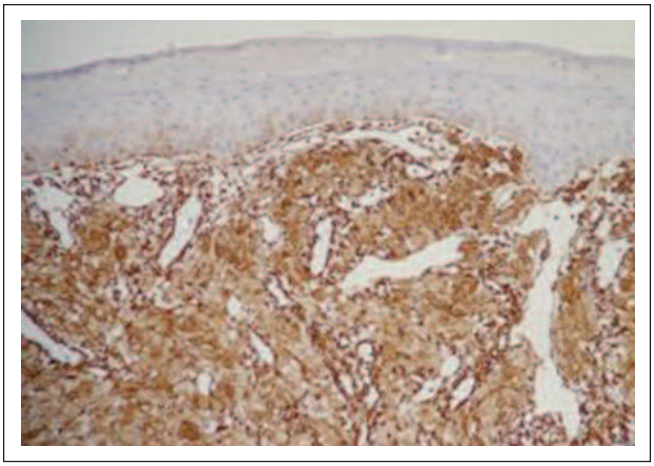

Figure 3. Reaction of the lesion cells to vimentin.

suggesting that the tumor may have become apparent only at a later stage.

The female predominance and regression after birth suggest maternal hormonal influence,[20] but hormonal receptor studies do not support this hypothesis because of the absence of detectable estrogen and progesterone receptors.[14] Immunohistochemical assays for estrogen and progesterone receptors were also negative in the present case.

Granular cells in CGCL are typically S-100 protein negative,[5,7,9,10,11,13-15] but HDL-A antigen, vimentin[5,7,10,13,14] and sometimes NSE and CEA are positive.[7,11,14] The cells lack immunostainning for actin and macrophage markers.[10,13] As they do not show S-100 protein immunostaining, it is suggestive that the lesion is derived from a different cell line from the conventional granular cell tumor, an important differential diagnosis which is S-100 positive.[13] This tumor is considered as originating from Schwann cells,[13] while the origin of the CGCL is still uncertain. We have also tested the CD68 marker to investigate the possible macrophage origin. Corroborating other authors,[13] it was negative and this hypothesis was also discarded. In our case, immunohistochemical findings were similar with those previously reported. The tumor cells stained positive only for vimentin. It confirms the hypothesis of a mesenchymal fibroblastic origin[9] (Table 1, Figure 3).

Differential diagnosis should include other granular cell tumors, fibromas, hemangiomas, lymphangiomas, rhabdomyomas, and gingival cysts.[14,16] A CGCL is seen only in a newborn, with predominance in females and the most common location on the maxillary alveolar ridge.

Treatment of CGCL is simple excision. Radical excision is discouraged because it can damage underlying structures. There have been no documented recurrences, even with

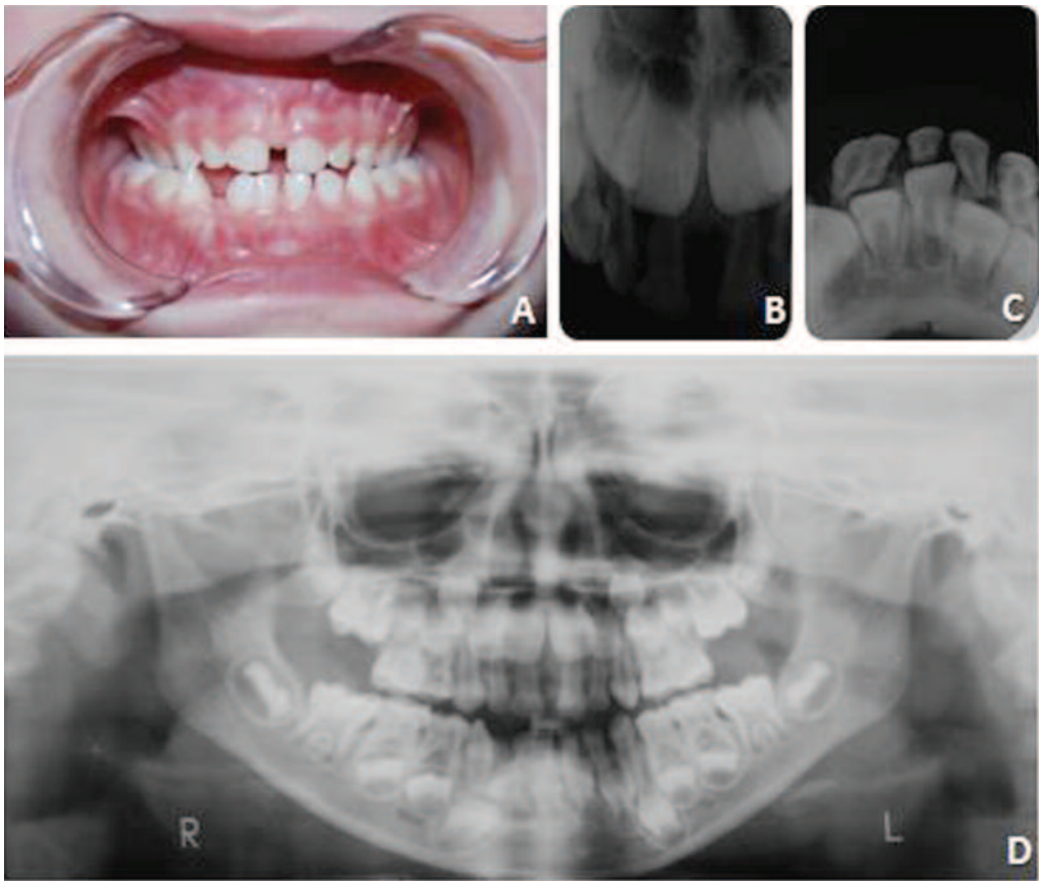

Figure 4. A: Primary teeth of the child at age four. B, C: Upper and lower periapical radiographs of the anterior region. D: Panoramic radiography showing normal primary and permanent dentition.

incomplete excision, and no reports of malignant transformation. In our case there was no local recurrence of the tumor 4 years after local excision.

CONCLUSIONS

The present case report emphasizes the need for early diagnosis of CGCL. The presence of four lesions shows how easily it can be treated when detected early. Dentists may be consulted initially regarding such cases and should be aware of the potential for airway compromise and familiar with the differential diagnosis.

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